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### 1 [DRM usability and legal issues: Import/export in digital rights management](#)



Reihaneh Safavi-Naini, Nicholas Paul Sheppard, Takeyuki Uehara

 October 2004 **Proceedings of the 4th ACM workshop on Digital rights management**

Publisher: ACM Press

 Full text available: pdf(211.60 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The inherently controlled nature of digital rights management systems does little to promote inter-operability of systems provided by different vendors. In this paper, we consider import and export functionality by which multimedia protected by one digital rights management regime can be made available to a multimedia device that supports a different digital rights management regime, without compromising the protection afforded to the content under the original regime. We first identify speci ...

**Keywords:** digital rights management, export, import, inter-operability

### 2 [Digital rights management and fair use by design: Fair use, DRM, and trusted computing](#)



John S. Erickson

 April 2003 **Communications of the ACM**, Volume 46 Issue 4

Publisher: ACM Press

 Full text available: pdf(100.36 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citings](#), [index terms](#)  
 html(29.25 KB)

How can DRM architectures protect historical copyright limitations like fair use while ensuring the security and property interests of copyright owners?

### 3 [Session 3: XML applications: XrML -- eXtensible rights Markup Language](#)



Xin Wang, Guillermo Lao, Thomas DeMartini, Hari Reddy, Mai Nguyen, Edgar Valenzuela

 November 2002 **Proceedings of the 2002 ACM workshop on XML security**

Publisher: ACM Press

 Full text available: pdf(466.82 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citings](#), [index terms](#), [review](#)

XrML (eXtensible rights Markup Language) is an XML-based language for digital rights management (DRM), providing a universal method for specifying rights and conditions associated with the use and protection of digital content and services. Originally developed at Xerox's Palo Alto Research Center (PARC), the specification facilitates the

creation of an open architecture for digital rights management of content or services. It can be integrated with both existing and new DRM systems. XrML is a g ...

**Keywords:** DRM, XML, content distribution and usage, digital rights management, rights, specification languages, standards

#### 4 Legal issues and fair use: DRMs, fair use and users' experience of sharing music

 Margaret Jackson, Supriya Singh, Jenine Beekhuyzen, Jenny Waycott  
November 2005 **Proceedings of the 5th ACM workshop on Digital rights management DRM '05**

**Publisher:** ACM Press

Full text available:  pdf(253.91 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

There is a mismatch between the law relating to fair use, personal use and copying; the central thrust of Digital Rights Management (DRM) and users' behavior relating to the listening and sharing of music. This paper reports on the different copyright regimes in the United States and Australia. It describes some of the current DRM systems. Against this background, the paper draws on a qualitative study to explore Australian users' experience of listening to and sharing music. A design for a good ...

**Keywords:** Australia, digital rights management, fair use, sharing behavior, usability, users' experience

#### 5 Digital rights management for the online music business

 Sai Ho Kwok  
June 2002 **ACM SIGecom Exchanges**, Volume 3 Issue 3


**Publisher:** ACM Press

Full text available:  pdf(51.88 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Digital rights management has become a pressing concern for the online music business. Existing digital rights management systems are backed by two license management models, the tethered model and the untethered model. These two license management models focus on the management of payments and usage rights. The problems with these models are that the tethered model forces consumers to be online, while the untethered model provides relatively less security to the license residing locally. This p ...

**Keywords:** digital rights management, electronic business, electronic commerce, intellectual property, license management, online music business

#### 6 Formal model and policy specification of usage control

 Xinwen Zhang, Francesco Parisi-Presicce, Ravi Sandhu, Jaehong Park  
November 2005 **ACM Transactions on Information and System Security (TISSEC)**, Volume 8 Issue 4

**Publisher:** ACM Press

Full text available:  pdf(291.34 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The recent usage control model (UCON) is a foundation for next-generation access control models with distinguishing properties of decision continuity and attribute mutability. A usage control decision is determined by combining authorizations, obligations, and conditions, presented as *UCONABC* core models by Park and Sandhu. Based on these core aspects, we develop a formal model and logical specification of UCON with an extension of Lamport's temporal logic of actions (TL ...

**Keywords:** Access control, formal specification, security policy, usage control

7 The UCON<sub>ABC</sub> usage control model

Jaehong Park, Ravi Sandhu

February 2004 **ACM Transactions on Information and System Security (TISSEC)**, Volume 7 Issue 1**Publisher:** ACM PressFull text available: pdf(518.61 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper, we introduce the family of UCON<sub>ABC</sub> models for usage control (UCON), which integrate *Authorizations (A)*, *obligations (B)*, and *Conditions (C)*. We call these core models because they address the essence of UCON, leaving administration, delegation, and other important but second-order issues for later work. The term usage control is a generalization of access control to cover authorizations, obligations, conditions, continuity (ongoing controls), and mutability. Trad ...

**Keywords:** access control, digital rights management, privacy, trust, usage control

8 Innovation, management & strategy: Reconcile art and culture on the web

Francis Rousseaux, Alain Bonardi

March 2004 **Proceedings of the 6th international conference on Electronic commerce ICEC '04****Publisher:** ACM PressFull text available: pdf(332.03 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we show how the practice of buying CDs surreptitiously conditions our musical activities, and how the practice of classifying *a priori*, making changes one at a time, structured by buying and the notion of genre, will disappear, as develops an *ad-hoc* organization of auditory samples, centered on prototypes and similarity. This movement is a proof of the loss of importance of the instantiation of CD marketing categories. Thus appears similarity-based calculus, acting o ...

**Keywords:** artificial intelligence, computer art, computing theory, content based indexing and retrieval, intelligent user interface, media mining, on-line music distribution

9 Innovation, management & strategy: Towards a framework for understanding the effectiveness of digital content exploitation strategies

Ernst-Jan Goedvolk, Edward Faber, René W. Wagenaar

March 2004 **Proceedings of the 6th international conference on Electronic commerce ICEC '04****Publisher:** ACM PressFull text available: pdf(259.74 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Due to initiatives like Napster and Kazaa the business case for delivering protected digital content remains problematic. Still little is known about the effectiveness of content exploitation strategies. In this paper the literature on content protection, provisioning and usage is reviewed. Based on this review a causal framework is developed, which seeks to explain the effectiveness of content exploitation strategies. The paper ends with formulating a research agenda for studying content exploi ...

**Keywords:** content exploitation, content protection

**Synopsis - Books and Software: iTV handbook: technologies & standards**

Eddie Schwalb

April 2004 **Computers in Entertainment (CIE)**, Volume 2 Issue 2**Publisher:** ACM PressFull text available: pdf(335.60 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Interactive television (iTV) is an evolutionary merging of digital TV and the internet. iTV technology offers new powerful ways for consumers to interact with content and service providers. In Europe, iTV has gained significant traction during the turn of the century. For example, about 500,000 viewers signed up for SkyDigital's email service during 2000. In another example, Nickelodeon's "Watch Your Own Week" voting application was available to SkyDigital viewers during Oct 22-27 2001. While on ...

**Keywords:** QuickTime, avi, broadcast, compression, digital tv, gif, interactive tv, internet, media streaming, mp3, network file system, zip

**11 Forum: Forum**

Diane Crawford

November 2002 **Communications of the ACM**, Volume 45 Issue 11**Publisher:** ACM PressFull text available: pdf(101.56 KB) html(21.24 KB) Additional Information: [full citation](#), [index terms](#)**12 Digital rights management for content distribution**

Qiong Liu, Reihaneh Safavi-Naini, Nicholas Paul Sheppard

January 2003 **Proceedings of the Australasian information security workshop conference on ACSW frontiers 2003 - Volume 21 CRPITS '03****Publisher:** Australian Computer Society, Inc.Full text available: pdf(224.63 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Transferring the traditional business model for selling digital goods linked to physical media to the online world leads to the need for a system to protect digital intellectual property. Digital Rights Management(DRM) is a system to protect high-value digital assets and control the distribution and usage of those digital assets. This paper presents a review of the current state of DRM, focusing on security technologies, underlying legal implications and main obstacles to DRM deployment with the ...

**Keywords:** DRM, digital content

**13 Watermarking: The effects of invisible watermarking on satellite image classification**

Gregory L. Heileman, Yunlong Yang

October 2003 **Proceedings of the 3rd ACM workshop on Digital rights management DRM '03****Publisher:** ACM PressFull text available: pdf(1.46 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Remotely sensed satellite images are an important source of geographical data commonly used as input for various types of classification algorithms. For example, these algorithms are commonly used to classify earth land cover, analyze crop conditions, assess mineral and petroleum deposits, and quantify urban growth. Many vendors of digital images are using or are considering the use of invisible watermarking as a means of protecting their

images from theft or unauthorized usage. Indeed, the use ...

**Keywords:** classification, content protection, information hiding, satellite imagery, watermarking

#### 14 Architectures: Achieving media portability through local content translation and end-to-end rights management



David W. Kravitz, Thomas S. Messerges

November 2005 **Proceedings of the 5th ACM workshop on Digital rights management DRM '05**

**Publisher:** ACM Press

Full text available: pdf(376.29 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The problem addressed in this paper is that of DRM interoperability. The term DRM interoperability, as used here, refers to approaches that provide for the transfer, from one "upstream" DRM system to another "downstream" DRM system, of DRM protected content and an associated license. We introduce the concept of a Rights Issuer Module (RIM) that is functionally situated in the home network between the upstream device (which includes an upstream-DRM agent) and downstream devices (which each include ...

**Keywords:** MPEG-21, NEMO, copyright protection, coral, digital content, digital rights management, export, import, interoperability, open mobile alliance, security

#### 15 Systems: Authorization for digital rights management in the geospatial domain



Andreas Matheus

November 2005 **Proceedings of the 5th ACM workshop on Digital rights management DRM '05**

**Publisher:** ACM Press

Full text available: pdf(829.98 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Since information is available in digital format, the protection of intellectual property and copyright fraud has become an important issue. This is, because the digital content can be copied without quality loss and with a reasonable effort of time, equipment and money. After copying, it can be distributed using the Internet, again with little effort of time and money. In such an environment, the loss of revenue for the music and film industry -- not only due to sites like Napster -- is becoming ...

**Keywords:** DRM, access control, geoXACML, geospatial

#### 16 Next generation access control models: A logical specification for usage control



Xinwen Zhang, Jaehong Park, Francesco Parisi-Presicce, Ravi Sandhu

June 2004 **Proceedings of the ninth ACM symposium on Access control models and technologies**

**Publisher:** ACM Press

Full text available: pdf(145.03 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Recently presented usage control (UCON) has been considered as the next generation access control model with distinguishing properties of decision continuity and attribute mutability. Usage control decision is determined by combining authorizations, obligations, and conditions, presented as *UCONABC* core models by Park and Sandhu. Based on these core aspects, we develop a first-order logic specification of UCON with Lamport's temporal logic of actions (TLA). The building blocks o ...

**Keywords:** access control, logic specification, security policy, usage control

17 Linux for suits: dialogue with Don

Doc Searls

November 2005 **Linux Journal**, Volume 2005 Issue 139**Publisher:** Specialized Systems Consultants, Inc.Full text available:  [html\(27.41 KB\)](#) Additional Information: [full citation](#), [abstract](#)

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18 Coding and Encryption: On error preserving encryption algorithms for wireless video transmission

Ali Saman Saman Tosun, Wu-chi Feng

October 2001 **Proceedings of the ninth ACM international conference on Multimedia****Publisher:** ACM PressFull text available:  [pdf\(157.93 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we describe error preserving encryption mechanisms for transmission of video over wireless networks. One of the main problems with the secure transmission of data over wireless networks is that the bit errors that occur need to typically be resolved *before* decryption can begin. For video streaming applications, this is unacceptable due to the general requirement that video be presented to the user in a continuous manner with low latency. In this paper, we describe a systematic ...

**Keywords:** video encryption, wireless video transmission19 Legal issues and fair use: Fairer usage contracts for DRM


Alapan Arnab, Andrew Hutchison

November 2005 **Proceedings of the 5th ACM workshop on Digital rights management DRM '05****Publisher:** ACM PressFull text available:  [pdf\(159.05 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

DRM has been widely promoted as a means to enforce copyright. In many previous papers, it has been argued that DRM gives too much power to rights holders and actually goes beyond the restrictions provided by copyright laws. In this paper we argue that DRM does not actually implement the fundamentals of copyright law, and is rather a mechanism for enforcing licence and contract restrictions on digital data. However, we believe that DRM does have a place in the digital distribution of copyrighted ...

**Keywords:** DRM, ODRL, REL, copyright, credential, fair use, negotiation, persistent access control, rights expression languages20 Access Control Management and Models: Towards usage control models: beyond traditional access control

Jaehong Park, Ravi Sandhu

June 2002 **Proceedings of the seventh ACM symposium on Access control models and technologies****Publisher:** ACM PressFull text available:  [pdf\(246.23 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper we develop the concept of Usage Control (UCON) that encompasses traditional access control, trust management, and digital rights management and goes beyond them in its definition and scope. While usage control concepts have been

mentioned off and on in the security literature for some time, there has been no systematic treatment so far. By unifying these three areas UCON offers a promising approach for the next generation of access control. Traditional access control has focused on ...

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